	Application No.	Applicant(s)
Notice of Allowability	09/558,476	SCHWARTZ, BRUCE V.
	Examiner	Art Unit
	Peter J Smith	2176

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *7/22/2004*.

2. ☒ The allowed claim(s) is/are *1-17,23-29 and 52-56*.

3. ☒ The drawings filed on *25 April 2000* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

1.   This action is responsive to communications: amendment filed 7/22/2004.

2.   Claims 1-17, 23-29 and 52-56 are pending in the case. Claims 1, 7, 10, 13, 23, and 54 are

independent claims.

EXAMINER'S AMENDMENT

3.   An examiner's amendment to the record appears below. Should the changes and/or

additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR

1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the

payment of the issue fee.

        Authorization for this examiner's amendment was given in a telephone interview with

Arlen Hartounian on 11/1/2004.

4.   The application has been amended as follows:

IN THE CLAIMS

1. (Currently Amended) A method implemented in a processing system comprising :

        receiving a line of text, the line of text having a set of ordered characters having

an original order and orientation;

        flipping the characters of the line of text about a display axis;

        identifying in the line of text a group of adjacent characters that share a

characteristic not shared by at least one other character in the line of text; and

flipping the characters of the group of adjacent characters about a vertical axis

which passes through the group of adjacent characters so that the group of adjacent

characters returns to the original order and orientation.

2. (Previously Presented) The method of claim 1 further comprising:

receiving a block of text;

breaking the block of text into a set of lines of text; and

performing said receiving the line of text, flipping the characters of the line,

identifying and flipping the group of adjacent characters, for each line of text of the set

of lines of text.

3. (Previously Presented) The method of claim 2 further comprising:

displaying the line of text on the display device after said flipping the group of

adjacent characters.

4. (Previously Presented) The method of claim 1 wherein:

the line of text is received from an application with no capability of handling bi-

directional text.

5. (Previously Presented) The method of claim 1 wherein:

the group of adjacent characters are in a language which is normally read left-to-

right.

6. (Previously Presented) The method of claim 1 wherein:

the group of adjacent characters are in a language which is normally read

~~displayed~~ right-to-left.

7. (Previously Presented) A machine-readable medium storing instructions, which,

when executed by a processor, cause the processor to perform a process comprising:

receiving a line of text, the line of text having a set of ordered characters having

an original order and orientation;

flipping the characters of the line of text about a center vertical axis of a display

on which the line of text is to be displayed;

identifying a set of runs of foreign characters in the line of text; and

for each identified run of foreign characters in the identified set, if any, flipping

the run of foreign characters about a center vertical axis of the run of foreign characters

so that the run of foreign characters returns to the original order and orientation.

8. (Previously Presented) The machine readable medium of claim 7 further storing

instructions which when executed by the processor, cause the processor to perform a

process comprising:

receiving a block of text;

breaking the block of text into a set of lines of text; and

performing said receiving the line of text, flipping the characters of the line,

identifying and flipping the run of foreign characters, for each line of text of the set of

lines of text.

9. (Previously Presented) The machine readable medium of claim 7 further storing

instructions which when executed by a processor, cause the processor to perform the

method further comprising:

passing the line of text to a native operating system for display.

10. (Currently Amended) A method implemented in a processing system comprising:

receiving a line of text, the line of text having a set of ordered characters having

an original order and orientation;

flipping the characters of the line of text about a center vertical axis of a display

on which the text is to be displayed;

identifying zero or more runs of foreign characters in the line of text; and

for each identified run of foreign characters in the line of text, if any, flipping the

characters of the run of foreign characters about a center vertical axis of the run of

foreign characters so that the run of foreign characters returns to the original order and

orientation.

11. (Previously Presented) The method of claim 10 wherein the method further

comprises:

receiving a block of text;

breaking the block of text into a set of lines of text; and

performing said receiving the line of text, flipping the characters of the line, identifying and flipping the characters of the runs of foreign characters for each line of text of the set of lines of text.

12. (Previously Presented) The method of claim 11 wherein the method further comprises:

passing the line of text to a native operating system for display.

13. (Previously Presented) A processing system comprising:

a processor;

a display device; and

a memory storing instructions which, when executed by the processor, cause the system to perform a process which includes

receiving a line of text, the line of text having a set of ordered characters having an original order and orientation;

flipping the characters of the line of text about a vertical center axis of the display device;

identifying a run of foreign characters in the line of text; and

flipping the characters of the run of foreign characters about a center vertical axis of the run of foreign characters so that the run of foreign characters returns to the original order and orientation.

14. (Previously Presented) The processing system of claim 13 wherein the process further comprises:

    receiving a block of text;

    breaking the block of text into a set of lines of text; and

    performing said receiving the line of text, flipping the characters of the line, identifying and flipping the characters of the run of foreign characters, for each line of text of the set of lines of text.

15. (Previously Presented) The processing system of claim 14 wherein the process further comprises:

    passing the line of text to a native operating system for display.

16. (Previously Presented) The processing system of claim 15 wherein the processing system is a mobile device.

17. (Previously Presented) The processing system of claim 15 wherein the processing system is a mobile wireless device.

18-22. (Canceled)

23. (Currently Amended) A method implemented in a processing system comprising:

receiving a line of text, the line of text having a set of ordered characters having

an original order and original orientation;

generating a set of runs within the line of text;

flipping a location and an orientation of each run of the set of runs about a center

vertical axis of a display; and

identifying a set of runs of foreign characters within the line of text;

flipping the orientation of each run of foreign characters about a vertical axis

within the run of foreign characters so that the run of foreign characters returns to the

original order and original orientation.

24. (Canceled)

25. (Original) The method of claim 23 further comprising:

rendering each run of the set of runs, except for the runs of foreign characters, in

a first orientation; and

rendering each run of foreign characters in a second orientation.

26. (Original) The method of claim 25 further comprising:

receiving a block of text having a set of ordered characters and a location; and

breaking the block of text into a set of lines of text, each line having a set of

ordered characters and a location.

27. (Original) The method of claim 26 wherein:

the text is received from an application with no capability of handling bi-directional text.

28. (Previously Presented) The method of claim 27 wherein:

the foreign characters are characters which are normally read left-to-right.

29. (Previously Presented) The method of claim 27 wherein:

the foreign characters are characters which are normally read right-to-left.

30-51. (Canceled)

52. (Previously Presented) A method as recited in claim 1, wherein the display axis is a center vertical axis of a display on which the line of text is to be displayed.

53. (Previously Presented) A method as recited in claim 1, wherein the characteristic is a left/right directionality of the characters of the group of adjacent characters.

54. (Currently Amended) A method implemented in a processing system comprising:

receiving a block of text including a plurality of lines of text, each line including a plurality of ordered characters having an original order and orientation;

breaking the block into a plurality of lines of text;

for each of the lines of text into which the block of text has been broken,

determining a set of runs of characters within the line of text, including identifying left-right characteristics of each of the runs of characters;

flipping a location and an orientation of each run of characters about a center vertical axis of a display; and

rendering each of the runs of characters on the display in accordance with the left-right characteristics of the run, including flipping at least one run of characters about a vertical axis within the run of characters so that the run of foreign characters returns to the original order and orientation.

55. (Previously Presented) A method as recited in claim 53, wherein said generating a set of runs comprises:

identifying any runs of foreign characters which span two lines in the block of text;

splitting each run of foreign characters which spans two lines in the block of text, if any, into two strings, one string on each of the two lines.

56. (Previously Presented) A method as recited in claim 53, wherein said flipping at least one run of characters about a vertical axis within the run of characters comprises flipping a run of characters, which has a different left-right characteristic than surrounding characters, about a vertical axis within the run of characters.

Allowable Subject Matter

1.   The following is an examiner's statement of reasons for allowance: Applicant's claimed

invention is both novel and not obvious compared to all prior art found by the Examiner.

Applicant's claimed invention converts a unidirectional line of text into a bi-directional display

of text using two flipping operations. First, the entire line is flipped and second the runs of

foreign characters are flipped such that they return to their original order and orientation. The

obvious combination of prior art found by the Examiner requires first using the teachings of

Kumhyr to reorder of the line of text. Then, using the same teaching, the runs of foreign

characters must be reordered to their original order. Finally, using the character flipping

technique of Ng, the native characters must be individually flipped. The Examiner believes the

claimed invention is more efficient in converting a unidirectional line of text into a bi-directional

display of text than any obvious implementation of the prior art. The Examiner has additionally

cited non-patent literature which demonstrates the results of four different bi-directional

reordering algorithms, however, none of the algorithms employ any sort of flipping.

        Any comments considered necessary by applicant must be submitted no later than the

payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for

Allowance."

Conclusion

2.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Peter J Smith whose telephone number is 571-272-4101. The

examiner can normally be reached on Mondays-Fridays 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joseph H Feild can be reached on 571-272-4090. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJS
November 1, 2004

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER